

$$\textcircled{A} \quad 8x + 3y = 24$$

$$\begin{array}{l} \text{x-int} \\ 8x = 24 \\ x = 3 \end{array}$$

$$\begin{array}{l} \text{y-int} \\ 3y = 24 \\ y = 8 \end{array}$$

$$\textcircled{B} \quad 12x + 4y = 24$$

$$4y = -12x + 24$$

$$y = -3x + 6$$

$$\textcircled{C} \quad \begin{array}{ll} 8x + 3y = 24 & \textcircled{1} \\ 2x + y = 10 & \textcircled{2} \end{array}$$

$$\textcircled{2} \quad y = -2x + 10$$

$$\textcircled{2} \rightarrow \textcircled{1}: 8x + 3(-2x + 10) = 24$$

$$8x - 6x + 30 = 24$$

$$2x = -6$$

$$x = -3$$

sub $x = -3$ into $\textcircled{2}$

$$\begin{aligned} y &= -2(-3) + 10 \\ &= 6 + 10 \\ &= 16 \end{aligned}$$

$$\begin{aligned} \textcircled{D} \quad 8x + 3y &= 22 \quad \textcircled{1} \\ 2x + 3y &= 10 \quad \textcircled{2} \end{aligned}$$

$$\textcircled{1} - \textcircled{2}: \quad \underline{6x = 12}$$

$$x = 2$$

\therefore PoI is $(2, 2)$

sub $x = 2$ into $\textcircled{2}$

$$\begin{aligned} 2(2) + 3y &= 10 \\ 3y &= 10 - 4 \\ 3y &= 6 \\ y &= 2 \end{aligned}$$

$$\textcircled{E} \quad \frac{8x}{3} + 3y = 24 \quad \textcircled{1}$$

$$2x + \frac{3y}{2} = 10 \quad \textcircled{2}$$

$$\begin{aligned} 3 \times \textcircled{1}: \quad 8x + 9y &= 72 \quad \textcircled{1} \\ 2 \times \textcircled{2}: \quad 4x + 3y &= 20 \quad \textcircled{2} \end{aligned}$$

$$\begin{aligned} \textcircled{1}: \quad 8x + 9y &= 72 \\ 2 \times \textcircled{2}: \quad 8x + 6y &= 40 \end{aligned}$$

$$\textcircled{1} - \textcircled{2}: \quad \underline{3y = 32}$$

$$y = \frac{32}{3}$$

sub $y = \frac{32}{3}$ into $\textcircled{2}$:

$$2x + \frac{3(\frac{32}{3})}{2} = 10$$

$$2x + \frac{32}{2} = 10$$

$$\begin{aligned} 2x + 16 &= 10 \\ 2x &= 10 - 16 \\ 2x &= -6 \\ x &= -3 \end{aligned}$$

$(-3, \frac{32}{3})$

Hilroy

$$\textcircled{F} \quad -\frac{9x}{2} + \frac{5y}{3} = \frac{4}{9} \quad \textcircled{1}$$

$$\frac{7x}{2} + \frac{4y}{3} = 10 \quad \textcircled{2}$$

$$18 \times \textcircled{1}: -81x + 30y = 8 \quad \textcircled{1}$$

$$6 \times \textcircled{2}: 21x + 8y = 60 \quad \textcircled{2}$$

$$8 \times \textcircled{1}: -648x + 240y = 64$$

$$0 \times \textcircled{2}: 630x + 240y = 1800$$

$$-1278x = -1736$$

$$x = \frac{-1736}{-1278} \quad \text{OR } \frac{868}{639}$$

$$x = 1.36$$

Sub $x = 1.36$ into $\textcircled{2}$

$$21(1.36) + 8y = 60$$

$$28.56 + 8y = 60$$

$$8y = 31.44$$

$$y = 3.93$$

- ③ let c be # of children
let a be # of adults

$$a + c = 2200$$
$$4a + 1.5c = 5050$$

$$a = 2200 - c$$

$$4(2200 - c) + 1.5c = 5050$$
$$8800 - 4c + 1.5c = 5050$$
$$3750 = 2.5c$$
$$1500 = c$$

$$a = 2200 - 1500$$
$$= 700$$

- ④ let x be the ones digit } original
let y be the tens digit

$$x + y = 7 \text{ ①}$$

$$10y + x = 10x + y + 27 \text{ ②}$$

$$\textcircled{2} \cdot 10y - y = 10x - x + 27$$
$$9y = 9x + 27$$
$$y = x + 3$$

$$x + 2 = 7$$
$$x = 5$$

$$x + y = 7 \text{ ①}$$
$$-x + y = 3 \text{ ②}$$

$$2y = 4$$
$$y = 2$$

25 & 52 are the numbers.